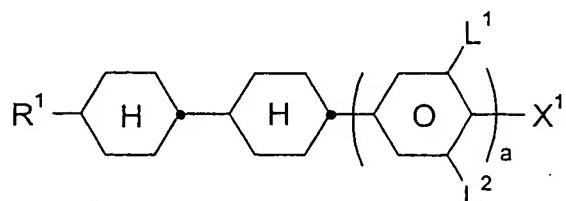


Patent Claims

1. Liquid-crystalline medium based on a mixture of polar compounds of positive dielectric anisotropy, characterised in that it comprises one or more compounds of the formula I

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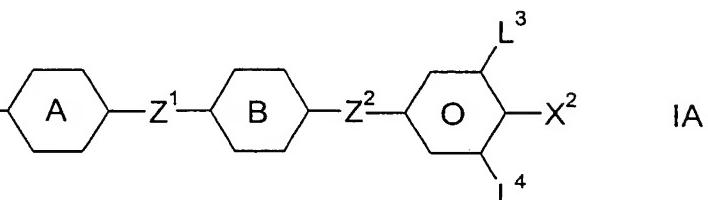
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and one or more compounds of the formula IA

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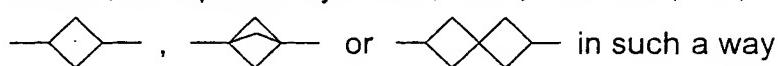
where the proportion of the compounds of the formula I in the medium is at least 18% by weight, and in which the individual radicals have the following meanings:

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R¹ is an alkenyl radical having from 2 to 8 carbon atoms,

R² is H, an alkyl radical having from 1 to 15 carbon atoms which is halogenated, substituted by CN or CF₃ or unsubstituted, where, in addition, one or more CH₂ groups in these radicals may each, independently of one another, be replaced by -C≡C-, -CO-, -CH=CH-, -O-,



that O atoms are not linked directly to one another,

X¹ is an alkyl radical, alkenyl radical, alkoxy radical or alkenyloxy radical, each having up to 6 carbon atoms, in

- 71 -

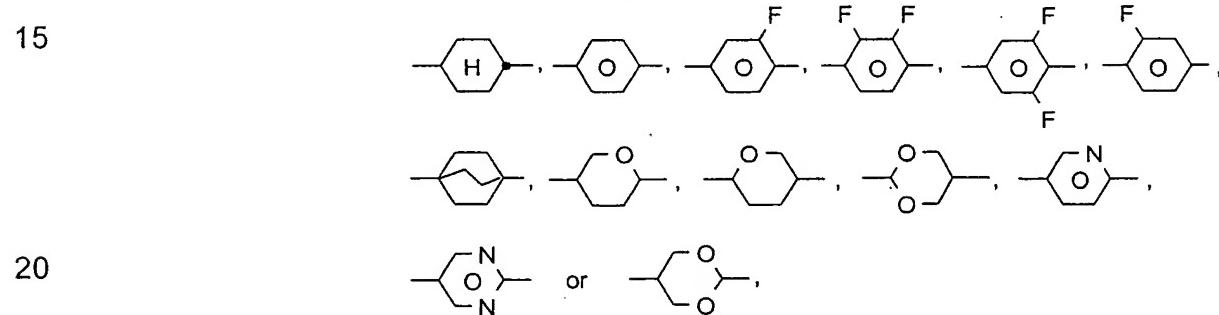
the case where $a = 1$ also F, Cl, CN, SF₅, SCN, NCS or OCN,

X^2 is F, Cl, CN, SF₅, SCN, NCS, OCN, a halogenated alkyl radical, halogenated alkenyl radical, halogenated alkoxy radical or halogenated alkenyloxy radical, each having up to 6 carbon atoms,
5

Z^1 and Z^2 are each, independently of one another, -CF₂O-, -OCF₂- or a single bond, where $Z^1 \neq Z^2$,
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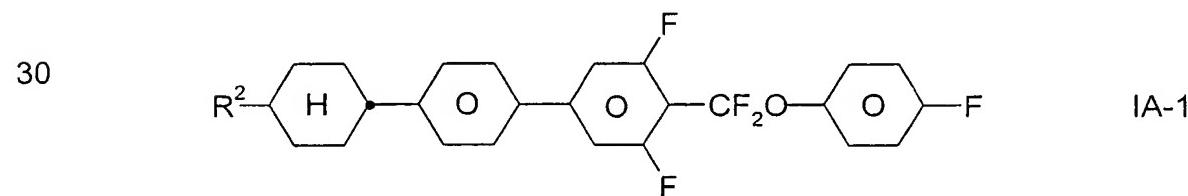
a is 0 or 1, and

$\text{--}\text{A}\text{--}$ and $\text{--}\text{B}\text{--}$ are each, independently of one another,

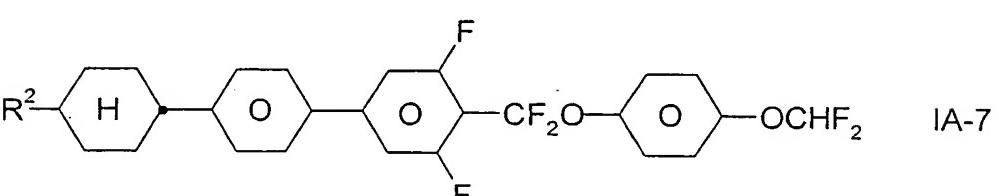
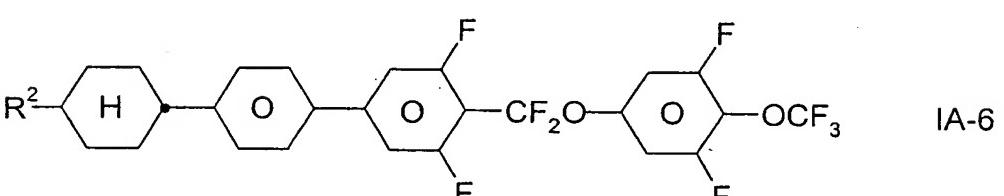
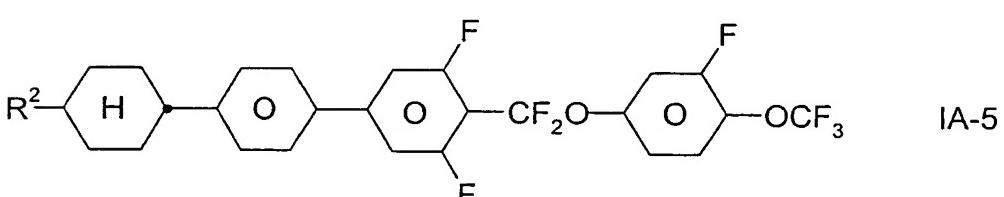
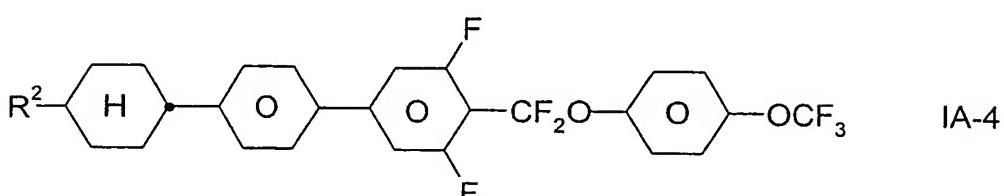
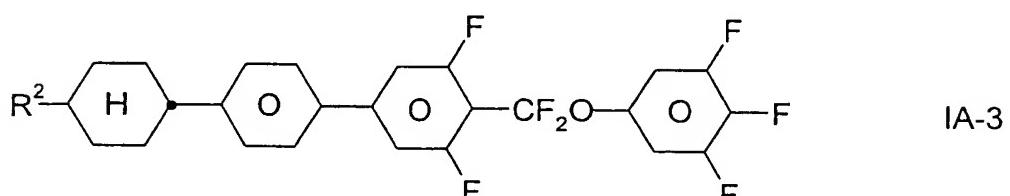
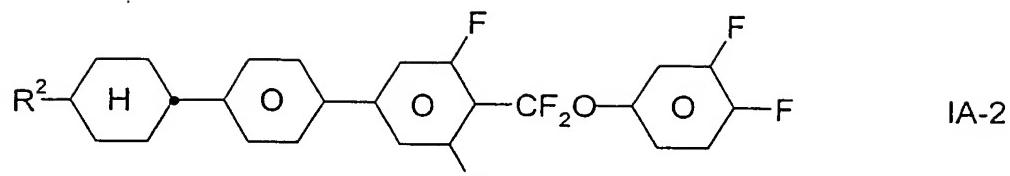


L^{1-4} are each, independently of one another, H or F.

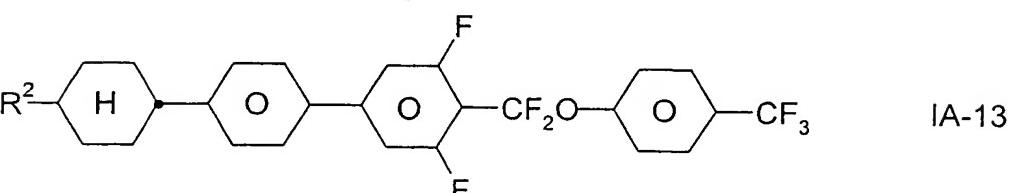
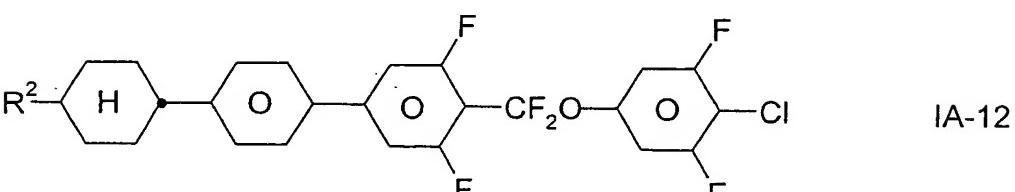
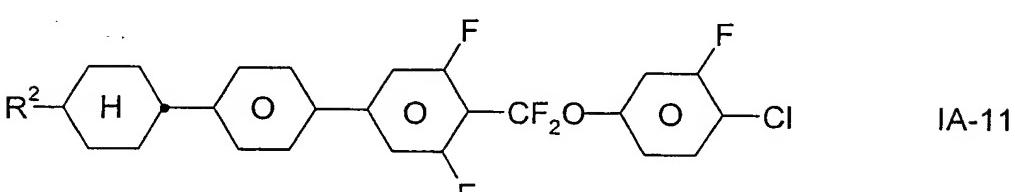
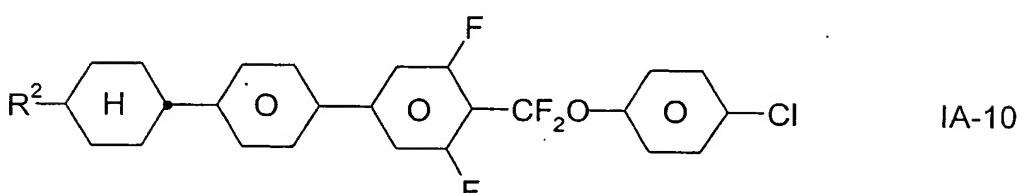
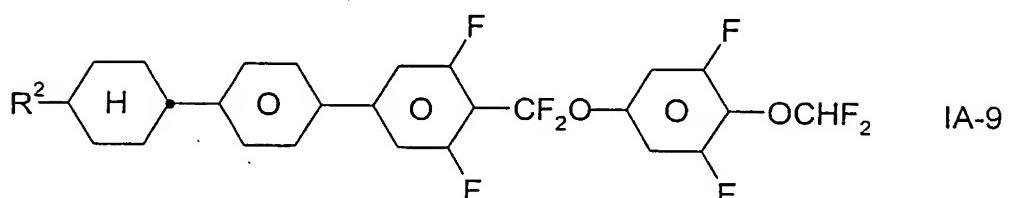
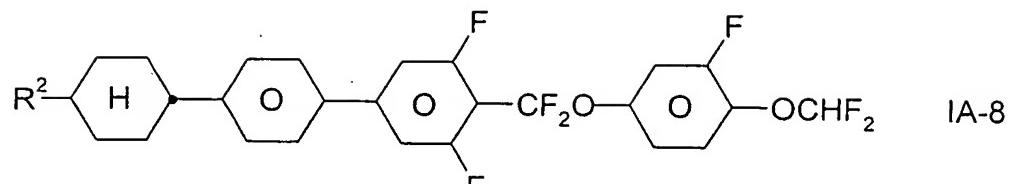
- 25 2. Liquid-crystalline medium according to Claim 1, characterised in that it comprises one, two or more compounds of the formulae IA-1 to IA-30



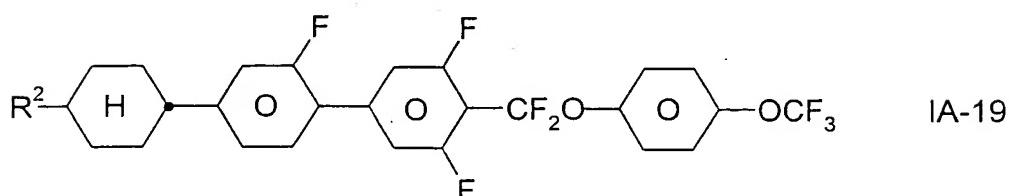
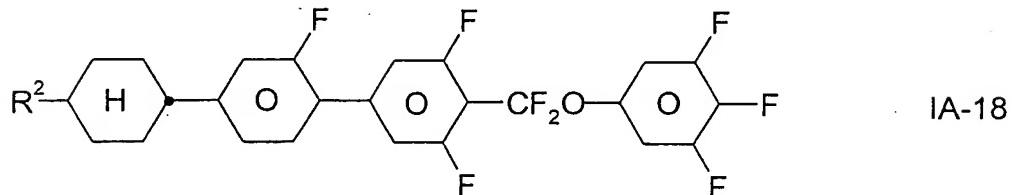
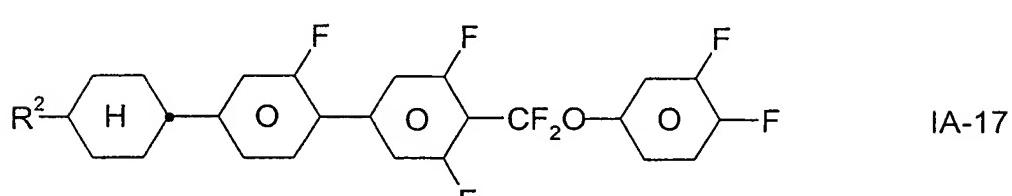
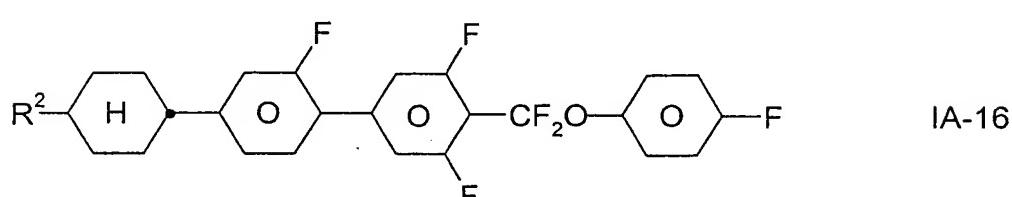
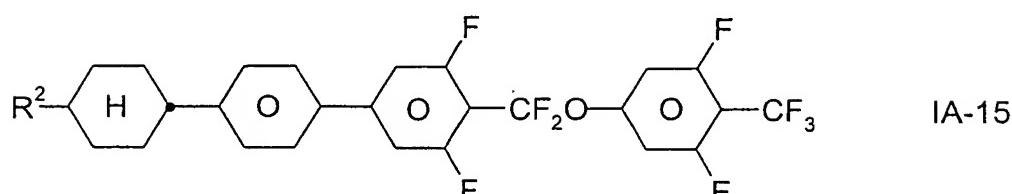
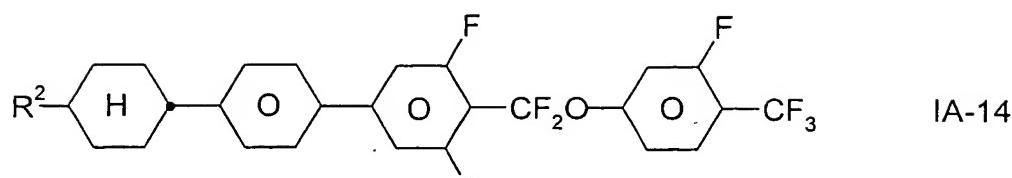
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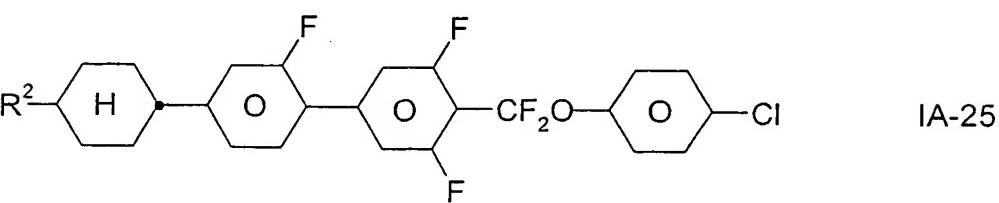
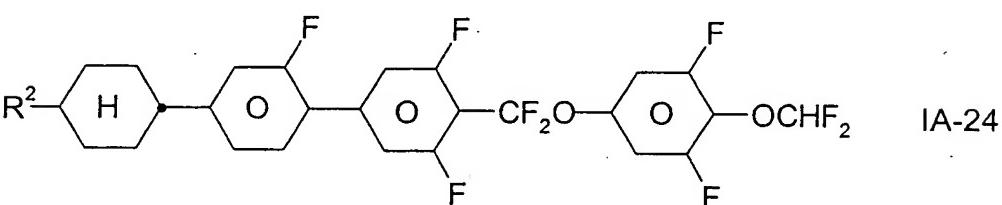
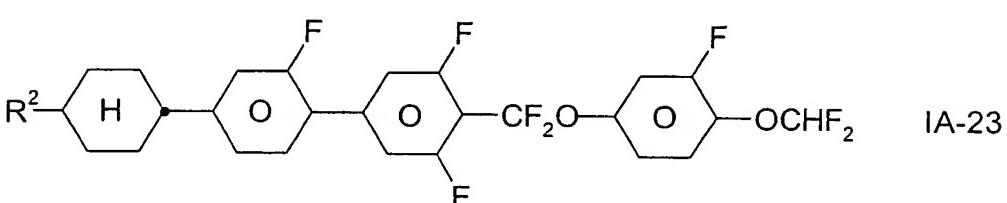
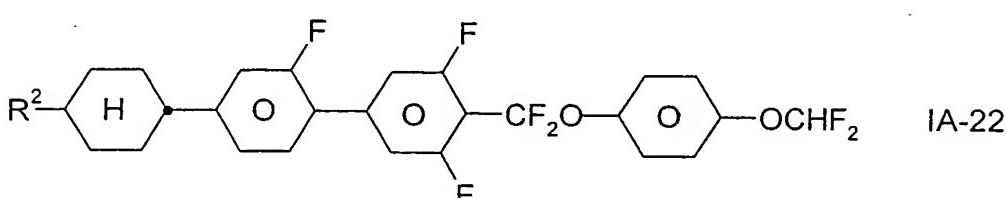
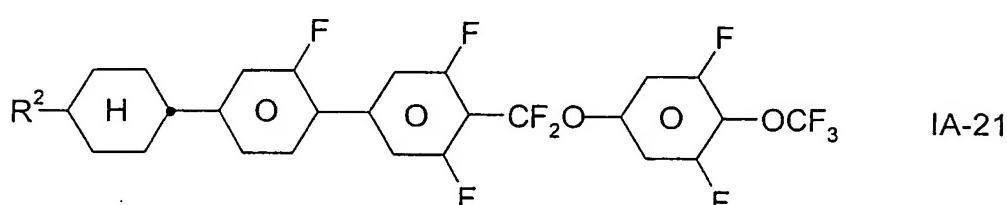
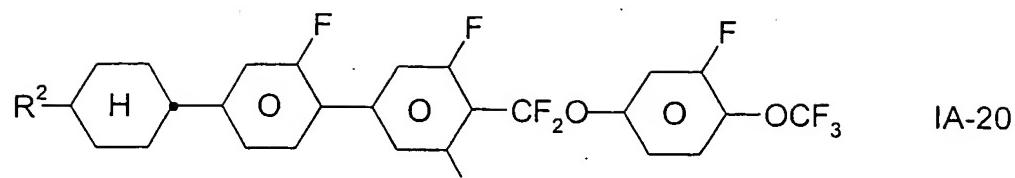
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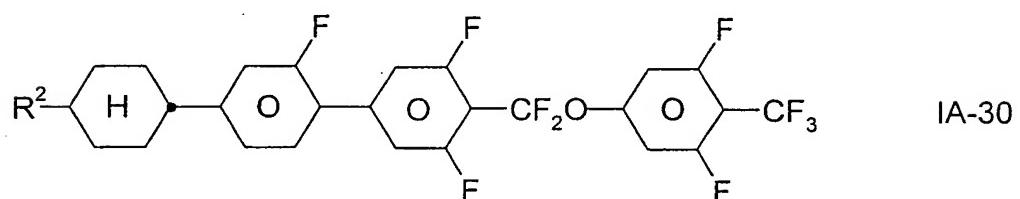
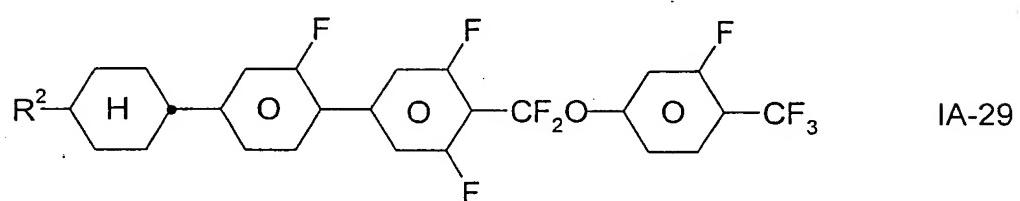
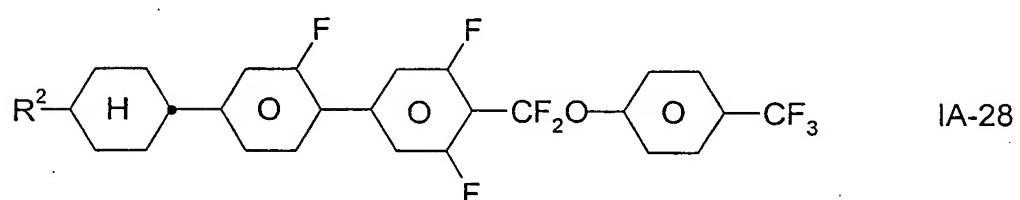
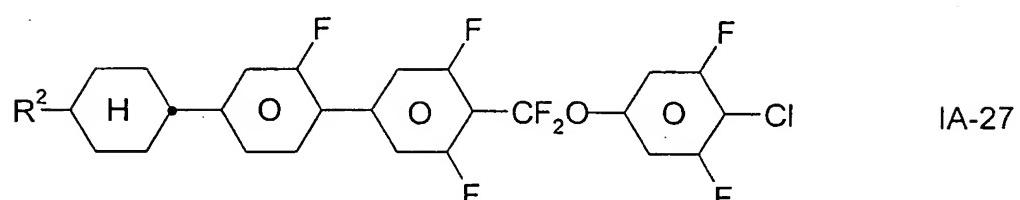
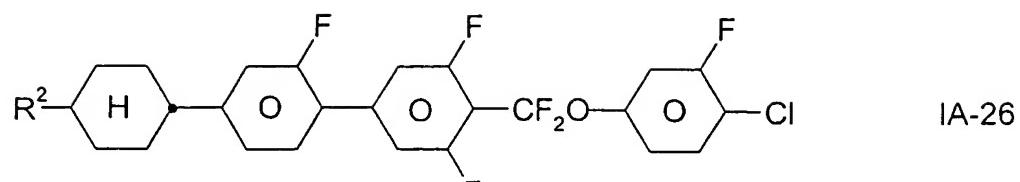
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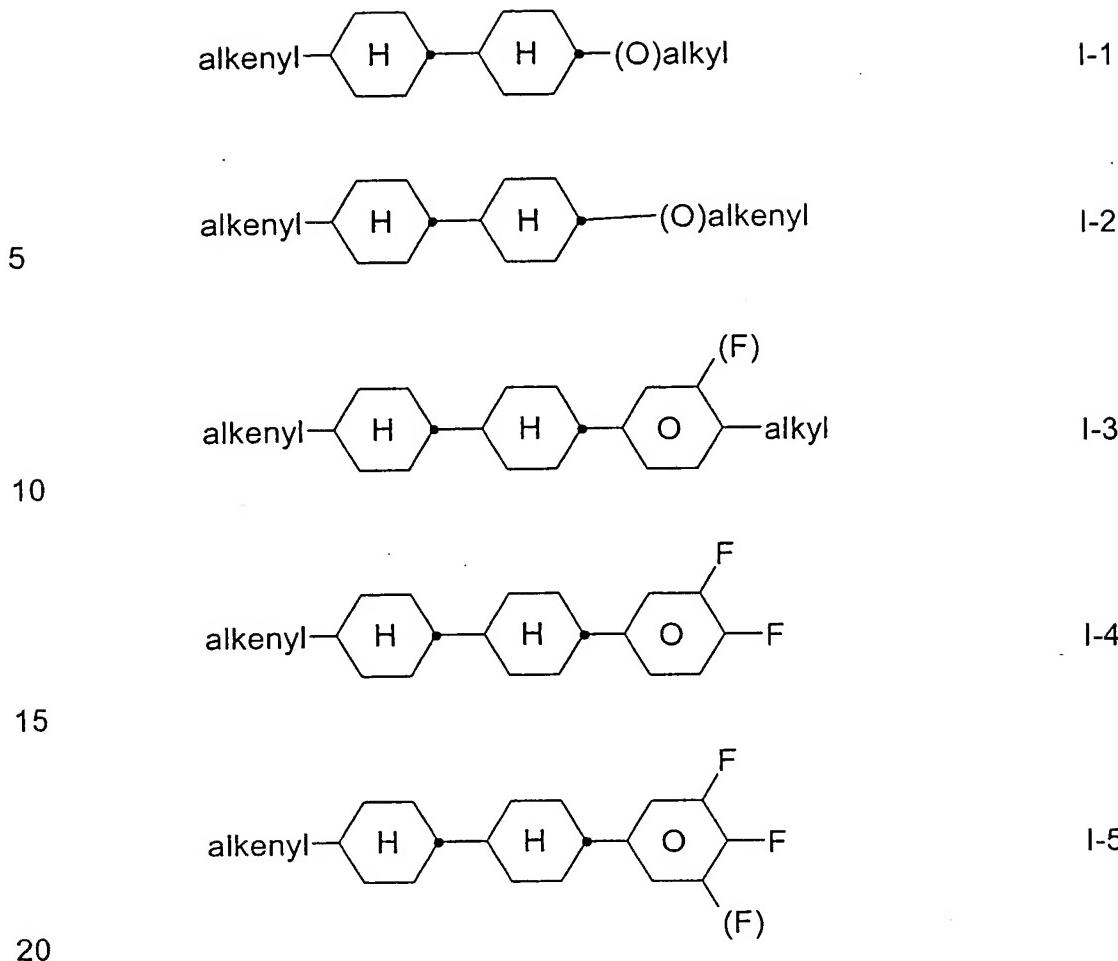


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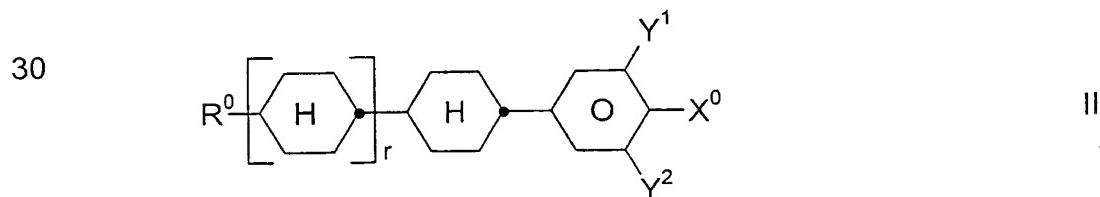
in which R² is as defined in Claim 1.

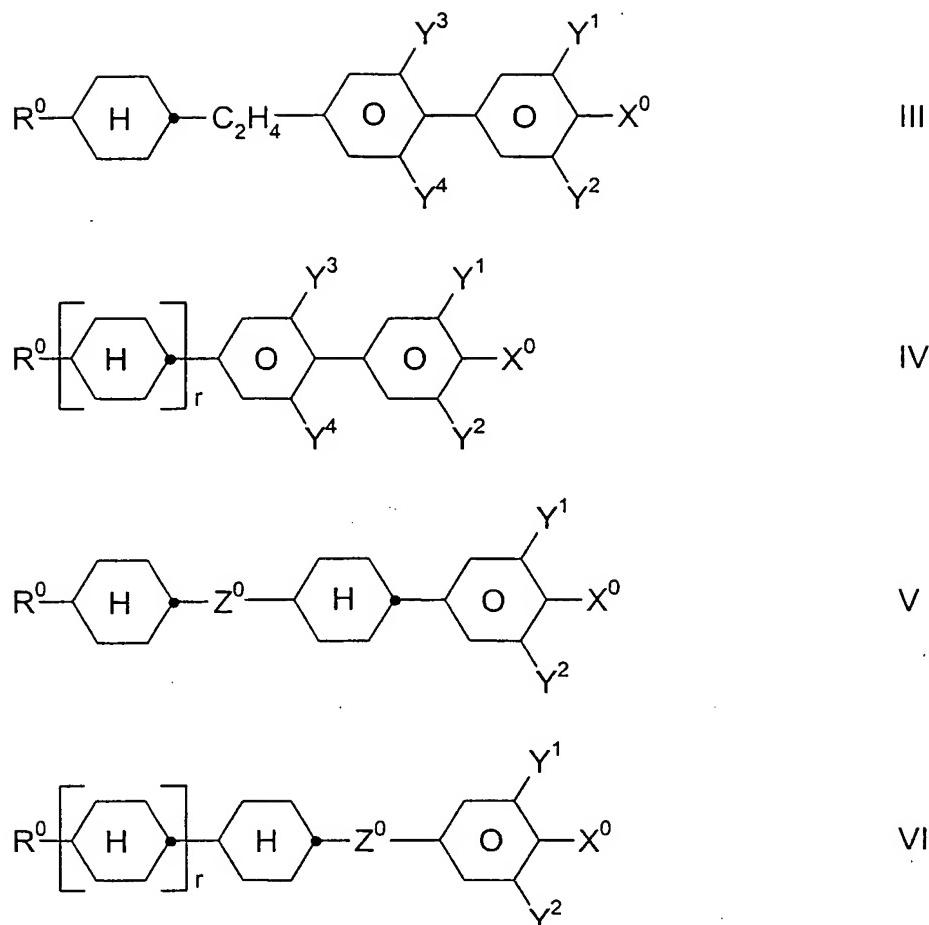
- 30
3. Liquid-crystalline medium according to Claim 1 or 2, characterised in that it comprises one or more compounds of the formulae I-1 to I-5



in which alkenyl is an alkenyl radical having from 2 to 8 carbon atoms and alkyl is a straight-chain alkyl radical having 1-15 carbon atoms.

- 25 4. Liquid-crystalline medium according to one of Claims 1 to 3, characterised in that it additionally comprises one or more compounds selected from the group consisting of the general formulae II, III, IV, V and VI





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in which the individual radicals have the following meanings:

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R^0 is H, n-alkyl, alkoxy, oxaalkyl, fluoroalkyl, alkenyloxy or alkenyl, each having up to 9 carbon atoms,

X^0 is F, Cl, halogenated alkyl, alkenyl, alkenyloxy or alkoxy having up to 6 carbon atoms,

30

Z^0 is $-C_2F_4-$, $-CF=CF-$, $-CH=CF-$, $-CF=CH-$, $-C_2H_4-$, $-CH=CH-$, $-O(CH_2)_3-$, $-(CH_2)_3O-$, $-(CH_2)_4-$, $-CF_2O-$, $-OCF_2-$, $-OCH_2-$ or $-CH_2O-$,

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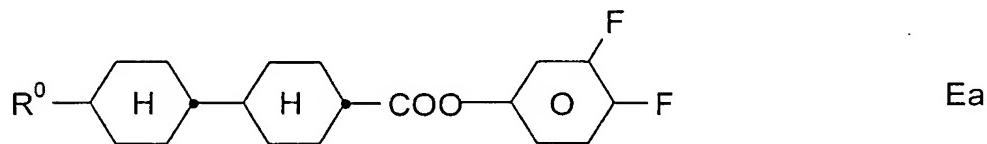
Y^{1-4} are each, independently of one another, H or F,

r is 0 or 1,

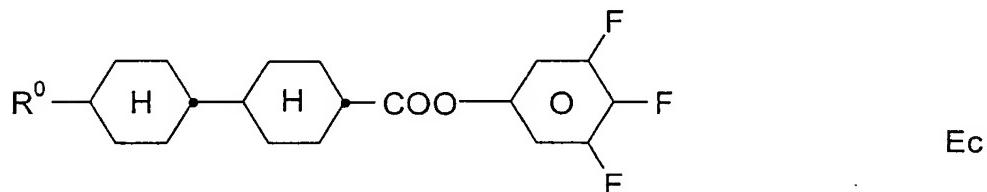
and the compound of the formula II is not identical with the compound of the formula I.

5. Liquid-crystalline medium according to Claim 4, characterised in that
the proportion of compounds of the formulae IA and I to VI together in
the mixture as a whole is at least 50% by weight.
10. 6. Liquid-crystalline medium according to one of Claims 1 to 5,
characterised in that it additionally comprises one or more com-
pounds of the formulae Ea to Ef

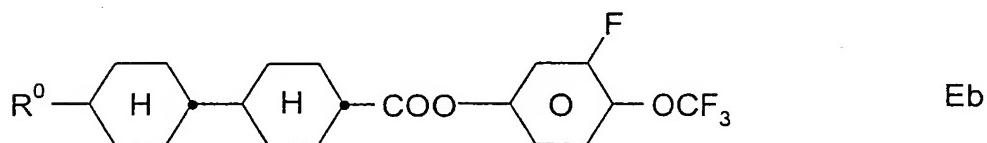
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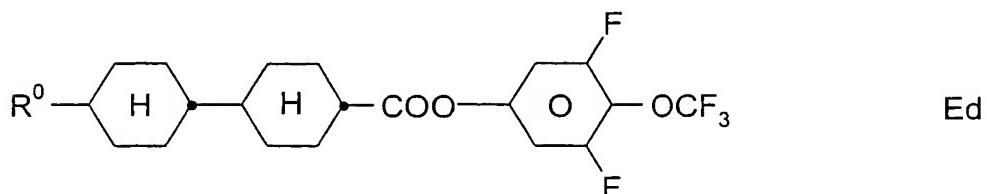
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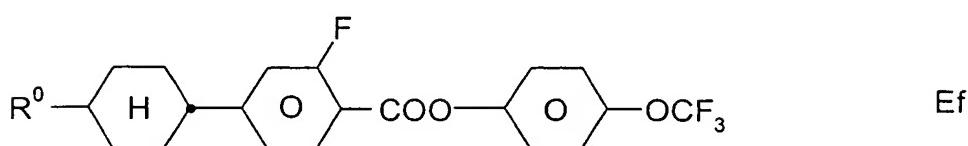
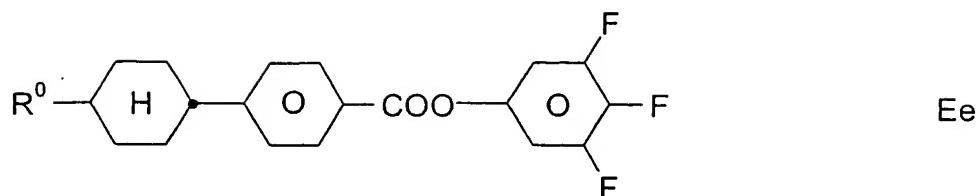


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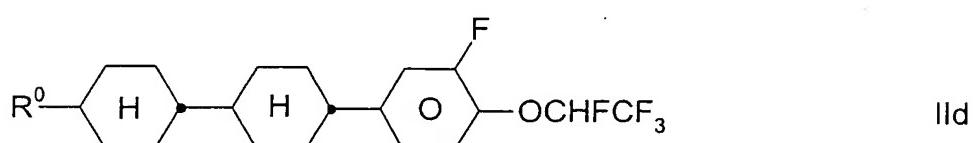
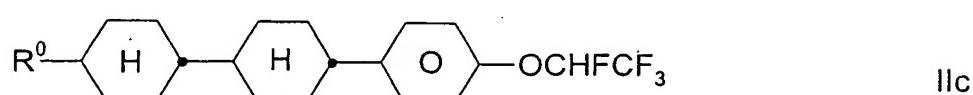
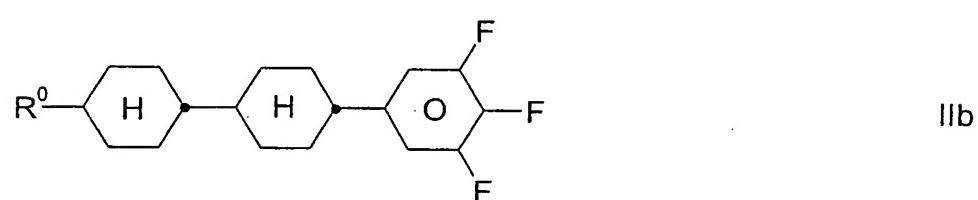
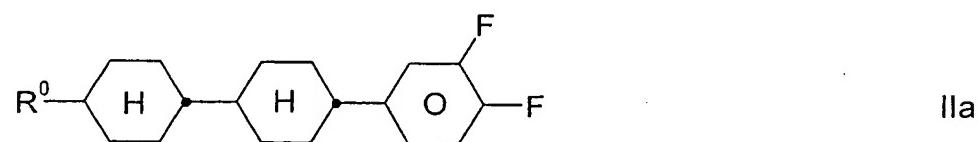
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- 80 -

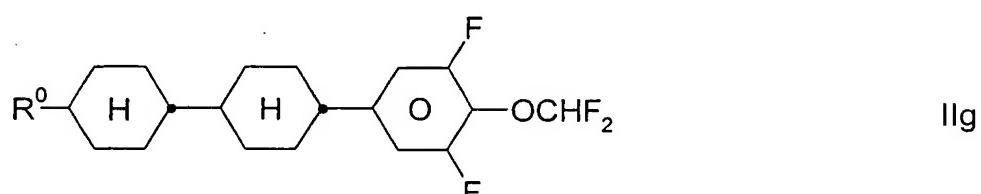
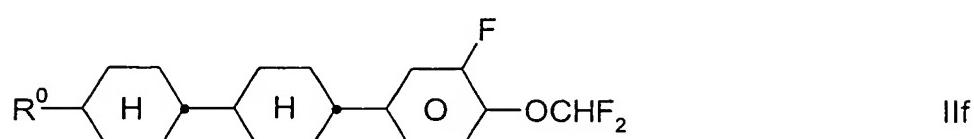
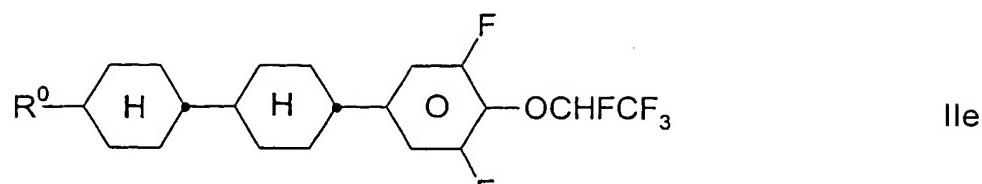


in which R^0 is as defined in Claim 4.

- 15
7. Liquid-crystalline medium according to one of Claims 1 to 6,
characterised in that it comprises one or more compounds of the
formulae IIa to IIg

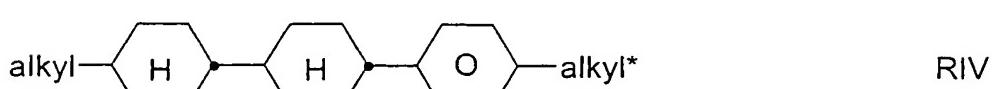
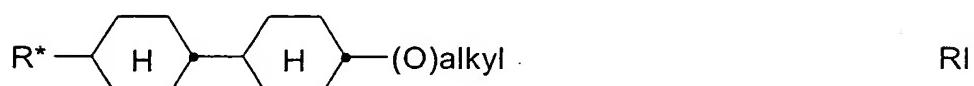


- 81 -

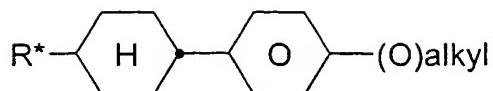


in which R^0 is as defined in Claim 4.

- 20
8. Liquid-crystalline medium according to one of Claims 1 to 7,
characterised in that it additionally comprises one or more com-
pounds of the formulae RI to RVII

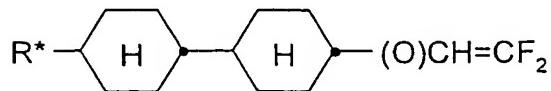


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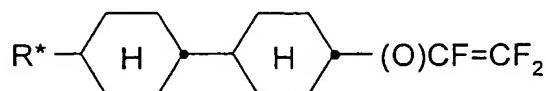
RV

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RVI

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RVII

in which

R^* is n-alkyl, alkoxy, oxaalkyl, fluoroalkyl or alkenyloxy, each having up to 9 carbon atoms, and

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alkyl and

alkyl^* are each, independently of one another, a straight-chain or branched alkyl radical having 1-9 carbon atoms.

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9. Liquid-crystalline medium according to one of Claims 1 to 8, characterised in that the proportion of compounds of the formula IA in the mixture as a whole is from 5 to 40% by weight.

10. Use of the liquid-crystalline medium according to Claim 1 for electro-optical purposes.

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11. Electro-optical liquid-crystal display containing a liquid-crystalline medium according to Claim 1.

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